

The author and Mr. Curtis spent four nights (June 17-21) at Morne Rouge, and visited the crater on June 18 and 20. They felt then and told the people that there was great danger to the town in case of succeeding great eruptions, and they saw no reason to suppose that the activity of the volcano was lessening. It was evident that, if the inner cone kept on increasing in height until it considerably overtopped the eastern rim, or, if the greater activity shifted to the eastern vent within the crater and behind the wall formed by the inner cone, the great south-western gash and its cliffs on the north would lose their directive influence, and the force of the explosions would be expended radially in all directions. The early telegraphic reports of the eruption of August 30 stated that the remains of Morne Lacroix had been blown away, which indicated that the violent activity had shifted to the east. Later and authentic reports by Prof. Heilprin made it clear that Morne Lacroix had not suffered much additional damage, and his photographs taken after that eruption show the top of the inner cone well above the crater rim. Hence the former supposition cited above proved to be correct.

#### PRIZES PROPOSED BY THE ACADEMY OF SCIENCES FOR THE YEAR 1903.

IN geometry, the Francoeur Prize (1000 fr.) is offered for discoveries or works useful to the progress of pure or applied mathematics; the Poncelet Prize (2000 fr.) for similar work done during the ten years preceding the award; and the Grand Prize of the Mathematical Sciences (3000 fr.).

In mechanics, the extraordinary Prize of 6000 francs for work tending to increase the efficiency of the French naval forces; the Montyon Prize (700 fr.) for inventing or perfecting instruments valuable in the mechanical arts; the Plumey Prize (2500 fr.) for improvements in connection with steam engines; and the Fourneyron Prize (1000 fr.) for a theoretical or experimental study of steam turbines.

In astronomy, the Pierre Guzman Prize (100,000 fr.) for finding a means of communicating with any planet other than Mars; the Lalande Prize (540 fr.) for the most interesting memoir or observation valuable to the progress of astronomy; the Valz Prize (460 fr.) and the G. de Pontécoulant Prize (700 fr.) for similar work.

In physics, the Hébert Prize (1000 fr.) for the author of the best treatise or most useful discovery for the commercial or practical use of electricity; the Hughes Prize (2500 fr.) for the best discovery or work contributing to the progress of physics; the Gaston Planté Prize (3000 fr.) for an important discovery or invention in the field of electricity.

In statistics, a Montyon Prize (500 fr.) for a work on French statistics.

In chemistry, the Jecker Prize (10,000 fr.) for work in organic chemistry, and the La Caze Prize (10,000 fr.).

In mineralogy and geology, the Delesse Prize (1400 fr.) for a work bearing on geological or mineralogical science.

In physical geography, the Gay Prize (2500 fr.) for a work having for its end the determination, as precisely as possible, of a series of geographical positions in a French colony.

In botany, the Grand Prize of the Physical Sciences (3000 fr.) for a research on the various modes of formation and development of the egg in the Ascomycetes and the Basidiomycetes; the Bordin Prize (3000 fr.) to demonstrate, by a study of numerous and varied types, the generality of the phenomenon of double fertilisation, or digamy, in the Angiosperms; the Desmazières Prize (1600 fr.) for the best work published in the course of the preceding year on Cryptogams; the Montagne Prize (1500 fr.) for work on the anatomy, physiology, development or description of the lower Cryptogams; the Thore Prize (200 fr.) for a work on the cellular Cryptogams of Europe.

In rural economy, the Bigot de Morogues Prize (1700 fr.) for any work tending to forward the progress of French agriculture.

In anatomy and zoology, the Savigny Prize (1300 fr.) for the assistance of young travelling zoologists with especial reference to the study of the invertebrate animals of Egypt and Syria; the Da Gama Machado Prize (1200 fr.) for the best memoir on the coloured portions of the tegumentary system of animals.

In medicine and surgery, a Montyon Prize, three prizes of 2500 fr. and three mentions of 1500 fr. for discoveries or inventions relating to the improvement of medicine or surgery; the

Barbier Prize (2000 fr.) for a discovery in medical, surgical or pharmaceutical science or in botany of curative value; the Bréant Prize (100,000 fr.) for the discovery of a radical cure for Asiatic cholera, or for pointing out the causes of the disease so that preventive measures leading to the eradication of the disease can be carried out; the Godard Prize (1000 fr.) for the best memoir on the anatomy, physiology and pathology of the genito-urinary organs; the Lallemand Prize (1800 fr.) for the encouragement of work on the nervous system; the Baron Larrey Prize (750 fr.) for a work treating of medicine, surgery or military hygiene; the Bellion Prize (1400 fr.); the Mège Prize (10,000 fr.); the Chaussier Prize (10,000 fr.) for the best book or memoir which has appeared during the last four years on legal or practical medicine.

In physiology, a Montyon Prize (750 fr.) for researches in experimental physiology; the Philipeaux Prize (900 fr.) for similar work; the Pourat Prize (1000 fr.) for a memoir on the action of high-frequency currents on the phenomena of life.

Other general prizes offered include the Binoux Prize (2000 fr.) for work on the history of science; Montyon Prizes (2500 fr. and 1500 fr.) for the discovery of any means rendering a dangerous trade less unhealthy; the Wilde Prize (4000 fr.) for a discovery or work on astronomy, physics, chemistry, mineralogy, geology or experimental mechanics; the Tchihatchef Prize (3000 fr.) for the encouragement of exploration in Asia by naturalists; the Cuvier Prize (1500 fr.); the Parkin Prize (3400 fr.); the Petit D'Orsay Prize (two prizes of 10,000 fr.), one for pure or applied mathematics and the other for work in natural science; the Boileau Prize (1300 fr.) for researches in hydraulics; the Estrade-Delcros Prize (8000 fr.); the Cahours Prize (3000 fr.) for the encouragement of young promising chemists; the Saintour Prize (3000 fr.); the Tremont Prize (1100 fr.); and the Gegner Prize (3800 fr.).

Of these, the prizes bearing the names of Pierre Guzman, Lalande, La Caze, Delesse, Desmazières, Wilde and Parkin are expressly stated to be offered without distinction of nationality.

#### LONDON CONFERENCE OF SCIENCE TEACHERS.

THE fifth annual conference of science teachers arranged by Dr. Kimmins in connection with the Technical Education Board of the London County Council was held at the South-Western Polytechnic, Chelsea, on January 9 and 10. There was a larger attendance than in any previous year, between four and five hundred teachers and others accepting invitations to be present. Adopting the admirable practice of former meetings of selecting for consideration a subject which during the preceding year has been specially receiving attention in the educational world, arrangements were made to give the whole of the first two sessions to a discussion on the teaching of elementary mathematics, more especially the instruction in elementary geometry, and the interest manifested in the subject fully justified the choice. The third meeting was devoted to the teaching of botany in schools and colleges, and the last to methods of illustrating the instruction in chemistry by lecture experiments.

The customary invitation to teachers of science to send for exhibition during the conference home-made apparatus, designed by themselves to simplify their instruction, was not this year responded to with any heartiness. Leaving on one side the exhibits of the staff of the South-Western Polytechnic, the pieces of apparatus on view were few in number and in no way remarkable for the ingenuity displayed. At the same time, the experiments in plant physiology arranged by Mr. H. B. Lacey, of the Chelsea Polytechnic, to illustrate his paper at the third meeting, were well calculated to show teachers of botany how the odds and ends of everyday life can be utilised in the experimental illustration of science lessons.

#### The Teaching of Geometry.

The chairman of the Technical Education Board of the London County Council, Mr. H. Ward, presided at the opening meeting, and after emphasising the value of conferences to teachers, contrasted German and English systems of education; he based his hopes for the future of English education on a combination of the excellencies of German methods with the elasticity and originality which characterise education in this country.

Sir William Anson, Parliamentary Secretary of the Board of Education, took the chair at the afternoon meeting of the first day. He confessed that, having been educated in the dark ages, when science and mathematics found but a small place—or perhaps he should more strictly say when mathematics had but a small place and science had no place at all—in the curriculum of the public schools, he came to listen with a perfectly unprejudiced mind to the discussion. After all, a comparison of various methods of teaching seemed to him to be for practical purposes as valuable as anything that could be done in the way of the training of the teacher. A grain of practice was worth a much larger proportion of theory, and it must be of great value to hear men who had been successfully engaged in teaching explain the difficulties of their subjects and the modes in which they brought their minds to bear upon the minds of those who had to be taught. The great secret of teaching was to bring their minds into immediate contact with the mind of the learner and to impart to him what they knew and the processes by which they learned it.

In the morning, papers were read by Mr. Usherwood, on the experimental method in geometry, and by Mr. Frank Castle, on the teaching of workshop mathematics. Mr. Usherwood related his experiences of teaching geometry to boys beginning the subject on a practical inductive plan, and advocated the use of paper-folding and similar expedients as means of encouraging the pupil's self-activity. Mr. Castle enumerated some of the shortcomings of the education given in the great public schools, and traced them to the rigid, iron-bound nature of the prevailing system. He referred to recent changes in the syllabuses of many public examinations as a hopeful sign that methods of mathematical instruction were becoming less academic and more suited to the practical needs of the present day. The subsequent discussion, in which the Rev. T. W. Sharpe, Dr. Hoffert, Mr. C. W. Bourne and others took part, showed that the work which has been accomplished by the committees of the British Association and of the Mathematical Association, in the direction of rationalising mathematical instruction, is, on the whole, meeting with the approval of practical teachers.

At the afternoon meeting, addresses on the teaching of geometry were delivered by Messrs. S. O. Andrews, W. D. Eggar and A. W. Siddons. Mr. Eggar said that the first object in the choice of exercises for a young boy beginning the study of geometry was to instil notions of lines, points, angles, areas, volumes and similar subjects, and this was best accomplished by simple measurement. A discussion followed during which Mr. Gerrans, referring to the recent changes in the mathematical requirements for university examinations, said that the universities had in the past deferred such alterations because of their doubt as to whether the schools were ready for change.

#### Rational Instruction in Botany.

The third meeting, under the presidency of Prof. Farmer, F.R.S., was devoted to a consideration of the methods of botanical teaching. During the course of his remarks, Prof. Farmer said that, examination syllabuses notwithstanding, the best way was to study a small part of the subject thoroughly and in all their instruction to help their students to think. Too little attention, he thought, was given to the economic aspects of the subject. He advocated a careful examination of the reasons, for example, of the peculiar conditions of the distribution of vegetation under beech and pine trees, and pointed out that such problems would lead to the discovery of the effects exerted by light, soil and other influences on growth. The effect of grass in an apple orchard was also instanced, and the information which could be obtained from the study of this problem in leading to an appreciation of the interaction of the grass growth in the matter of drainage and the supply of oxygen was pointed out. Prof. Farmer gave an interesting example of what he called a "museum of mismanagement," in the case of a larch plantation which had been planted on a mountain-side, though it should have been well known that the larch is a deep-rooted plant.

Two papers were read, one by Miss Lilian Clarke, on the rational teaching of botany, and the other by Mr. Lacey, on experimental plant physiology. Miss Clarke, in a preeminently practical paper, described how, by experiments in the laboratory and school-garden at James Allen's school, Dulwich, she has succeeded in making botany an interesting and educational subject of study for girls. She explained that though in the

past this work has been somewhat in abeyance in the winter, they hoped in the future to be able, owing to the provision by the London Technical Education Board of a botanical laboratory, to be able to pursue the work without a break throughout the year. Mr. Lacey concerned himself more with the work of advanced students. He described numerous experiments, illustrated by an excellent series of lantern slides, to show how lessons in botany may be made more valuable by the utilisation of the common objects of ordinary life in the experimental work. The slides of botanical objects under the microscope which he also showed were of particular value to teachers in demonstrating how easy it is to supply the student with graphic illustrations of the objects of his study. The informative nature of the papers led to questions from the audience rather than a discussion.

#### The Art of Illustrating Teaching.

The last meeting, at which Prof. Callendar, F.R.S., presided, was taken up with a consideration of the methods of illustrating lectures by experiments and lantern slides. In introducing the speakers, Prof. Callendar insisted on the importance of experimental work in the teaching of physics and chemistry, and referred to the difference between experiments suitable for performance by the student and those necessary to illustrate the lectures of the teachers. Two addresses were given, one by Mr. G. S. Newth, on experimental illustration in the teaching of chemistry, and the other by Mr. Harold Busbridge, on the making of lantern slides. Mr. Newth, before proceeding to perform certain typical experiments, criticised in some particulars what is commonly known as the heuristic method of teaching, and complained that in important respects it misled the pupil and gave him wrong ideas as to the nature of the great generalisations called chemical laws. In the selection of experiments, he said, the teacher should choose those only which are really illuminative and never introduce one merely because it is amusing. Mr. Newth also gave invaluable hints to teachers as to how to avoid failure in their experiments. The experiments performed were well chosen and invariably met with the success which Mr. Newth's well-known manipulative dexterity led the audience to expect.

Mr. Busbridge provided teachers with practical assistance in the art of making lantern slides at a small cost. He left on one side all photographic methods and confined his attention to the elucidation of simple expedients which could be utilised by a teacher with very little experience of laboratory methods. In a short discussion which followed, Dr. Hoffert referred to an important consideration if the experimental illustration of the ordinary teacher of science in schools is to be improved, that is, the diminution of his duties if time enough is to be provided for him to prepare good, suitable lecture experiments. As Dr. Hoffert said, it is unreasonable to expect the science master to add to his already arduous work by staying after school hours to prepare experiments. All science masters should be given time enough during the hours in which the school is open in which to prepare the experiments necessary for satisfactory lessons in science.

A. T. S.

#### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

IT is reported that the Italian Minister of Public Instruction has authorised the establishment of a post-graduate school of hygiene and medical jurisprudence in connection with the University of Turin.

AT University College, London, Mr. V. H. Blackman will give a course of about six demonstrative lectures on microscopical technique in botany on Mondays during the current term, commencing Monday, January 19, at 4 p.m.

THE *Daily Mail* states that the late Mr. F. J. Quick, of Eltham, and Trinity Hall, Cambridge, left his residuary estate to the University of Cambridge in trust, to apply the income in promoting the study of vegetable and animal biology, for which purpose the university will probably eventually receive between 50,000*l.* and 60,000*l.*

AT a meeting last week of the Liverpool School of Tropical Medicine, it was announced that since the previous meeting 10,000*l.* had been collected or promised towards founding a chair of tropical medicine in University College, Liverpool, which had been accepted by the college authorities. Major